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Antarctica and the importance of the Environment – A rude awakening

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Introduction

When thinking about Antarctica I imagine the image is of a vast, white continent at the bottom of the world. It has breathtaking scenery that makes your mind wander, but it is also a continent that—after being there—leads a person to reflect on themselves, on life and death, past and present, and the future. Its stories are all over the landscape and follow a person around like a shadow in the 24-hour daylight. It is a long time ago that the first men sat foot on this continent. But the marks are still there, not only in the stories, but also in the landscape; the first hut erected is still standing, and buried in the ice are many remains of human impact.

It is interesting to ponder on how humans have behaved on the continent and to examine whether and how their behaviour has changed over time. What has brought about these changes and what does this mean for the future protection of Antarctica? This paper will chart the evolution of changing behaviour towards the Antarctic environment from the early position of its use value to today's more environmental protection focus.

Today we have a framework of laws and regulations for the Antarctic continent and its surrounding oceans, but it is only 20 years since the Protocol on Environmental Protection to the Antarctic Treaty was adopted, and big changes have been made during the recent years. Our understanding of this land and continent is completely different today than 100 years ago. From being a white unknown, uncharted area, terra nullius/incognito, on the map at the turn of the last century humans have explored, charted, claimed the continent and exploited it's marine resources. Our knowledge has increased, and is continuing to do so, not only about Antarctic matters, but also about the Earth in general. Focus on the environment and our behaviour has become a world issue. The environment is a fundamental element in human pleasure and satisfaction even though human behaviour has environmental impacts that are sometimes negative and destructive.

Legal requirements, emanating from the signing of the Antarctic Treaty in 1959, and added regulations and measures to control human activity and change conduct in the Antarctic, are elements that have shaped behaviour. But general public opinion and peer pressure have also been significant parts of the process.

Early development

At the turn of the 20th century Antarctica attracted world attention. Little was known about the continent, and focus was directed towards exploration and science. Whalers and sealers had explored the fertile seas and coastline, but were reluctant to share and publish their knowledge. As national exploration advanced, the importance of ownership increased and territorial claims were made. In between the two World Wars and development in the west, Antarctica was given low priority with fluctuating activities, until it again became a strategic window of opportunity in the political arena.[1]

When whaling in the Arctic started to deplete stocks and make harvesting uneconomic in the 1880s, the focus turned to the other side of the world and the Southern Oceans. A break-through in whaling technology, new ships and new equipment made it extremely profitable for the Northern Hemisphere whalers, eg. the Norwegians, Americans and British, to go south.[2] There were great risks, but there were also big profits to be had. Whaling became so professionalised and efficient that by the 1930s the whalers had overfished in area after area and brought one whale species after another close to extinction. Whaling was paused during World War II, and it never again reached the earlier economical heights.[3]

Measures to control fishing and whaling were created in the early 1900s. They were more a restriction on *who* were allowed to do whaling and concessions and licenses were given by the countries claiming territory, eg. the United Kingdom. But in the 1930s several meetings on whale preservation were held, resulting in the International Convention for the Regulation of Whaling in 1946.[4] The countries which negotiated and adopted this convention, including all the main whaling countries, agreed to regulate whaling more, and set quotas for the purposes of sustainable harvesting. They talked about common interests, sustainability, international regulations and preserving the future. They saw what 70 years of whaling in the Southern Oceans had done to the whale population numbers, acknowledging that human activity had had a huge impact on the environment. But the main goal for all these meetings and the eventual convention was not to stop whaling, but to keep the industry sustained.[5]

In time, with campaigning and pressure from non-governmental organisations (NGOs), one country after another went from commercial whaling to protecting the whales, as they were seen as 'the great natural resources'[6] that should be preserved for the enjoyment of future generations. In 1985 there were only 6 countries whaling in the world, though for 'scientific' purposes.[7] Regulating measures had been put in place, quotas had been set, a little too late and left the Southern Oceans razed. Some countries continue to legally object to the International Whaling Commission's (IWC) moratorium, thereby distancing them from any legal obligation, but only Japan still operates in the Southern Oceans under its scientific exemption.[8]

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[1] Berkman, Paul Arthur. *Science into policy : global lessons from Antarctica* (San Diego, CA, 2002), 49-52.
[2] Zachariassen, Ketil, et al. *Norsk polarhistorie* (Oslo, Gyldendal, 2004), vol I, 219-389.
[3] Keith Suter, *Antarctica : private property or public heritage?* (Leichhardt, N.S.W London: Pluto Press Australia ; Zed Books, 1991), 28-32.
[4] Berkman, Paul Arthur. *Science into policy : global lessons from Antarctica* (San Diego, CA, 2002), 172.
[5] Berkman, Paul Arthur. *Science into policy : global lessons from Antarctica*, 173-176.
[6] International Whaling Commission. *International convention for the regulation of whaling*, 02.12.1947, http://iwcoffice.org/commission/convention.htm.
[7] Keith Suter, *Antarctica : private property or public heritage?*, 30.
[8] Keith Suter, *Antarctica : private property or public heritage?*, 30-32.

In contrast to the whaling, which is regulated internationally by the IWC, sealing is regulated within the Antarctic Treaty System by the Convention for the Conservation of Antarctic Seals (CCAS). The CCAS came about because Norway suggested in 1964 the possibility of a resumption of commercial sealing. The Antarctic Treaty Consultative Parties immediately started working on a treaty to regulate commercial sealing should it ever resume.[9] The CCAS was adopted in 1972 and came into effect in 1978, effectively regulating and perhaps even ending all prospects of sealing.[10] However a Soviet action in 1987 involving the capturing of almost 5,000 seals, for scientific purposes, showed a weakness in the Treaty, as research and permits could easily be abused.

On returning home in 1899, after the first wintering over in Antarctica on the *Belgica* expedition, the Polish oceanographer Henryk Arctowski wrote an article on 'the problems of Antarctic exploration'. He wanted to see more exploration of the area, conducted as international cooperation to do science with a systematic approach, inspired by Carl Weyprecht's ideas of 'principles of Arctic research' from 1875[11]. Arctowski finished his article by saying that it 'is doubtless but a dream' in this century, but it may be a hope to implement in the next.[12]

The wish for large-scale international cooperation in Antarctica has been around for a long time, from the first International Polar Year (IPY) in 1882–83; again encouraged in the IPY in 1932–33; and International Geophysical Year (IGY) 1957–58. The IGY was the first successful large-scale cooperation in the Polar Regions.[13] The IGY changed the world. It opened doors in international cooperation for the future. It set the benchmark and laid the foundation. The IGY in 1957–58 was originally meant to be an International Polar Year, but became the larger International Geophysical Year, with 12 nations involved in the Antarctic establishing 60 stations. The cooperation in the Antarctic was extended after the IGY and formalized by the Antarctic Treaty in 1959, successfully establishing a scientific epoch of discovery and exploration that is still ongoing today.[14]

It was the beginning of an international cooperation on science and research never seen before, giving knowledge in return, but as costs were high the involvement of governments and politics was inevitable.

The early science was mainly geology, glaciology, biology and meteorology, to determine the structure of the continent and the species there. As more knowledge about the continent became known the scientists developed and expanded their research. Technology accelerated, with new instruments, new means of transportation, and new ways of doing research. Leading up to the negotiation and adoption of the Antarctic Treaty there were still vast areas unknown and science unexplored. Most of the mapping and exploration was done after World War II using planes and aerial photography. New technologies also lead to settlements and the building of permanent stations. The 'unknown white spot' on the map 60 years earlier was now an 'inhabited white spot' and in development.

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[9] Keith Suter, *Antarctica : private property or public heritage?*, 32-34.
[10] The Secretariat of the Antarctic Treaty. *Convention for the Conservation of Antarctic Seals (CCAS)*, http://ats.aq/e/ats_keydocs.htm
[11] Anounced at the 48th Meeting of German Scientists and Physicians in Graz, Austria.
[12] Henryk Arctowski, *The problem of Antarctic exploration*, Dover, 1899.
[13] The International Polar Year. *About IPY*, 04.02.2010, http://www.ipy.org/about-ipy.
[14] Thomas J. Mulder, *Antarctica : global, environmental and economic issues* (Arctic region and Antarctica issues and research; New York: Nova Science Publishers, 2011), 222.

Adding legal requirements, a framework for the future

After the IGY and the establishment of the Antarctic Treaty in 1959, science and peaceful purposes were 'placed' on the continent as the main reasons for being there. Legally binding articles would manage activities and help to keep the continent 'pristine'. And just as the Treaty had been ratified in 1961 work began on improving and expanding it. An additional instrument, the Agreed Measures for the Conservation of Antarctic Fauna and Flora was adopted in 1964.[15]

The Consultative Parties have tried to renew, revise and improve the treaty as 'problems' arose. How successful they have been is another question, but improvements have been made as times, focus and opinions changed.

The Agreed Measures for the Conservation of Antarctic Fauna and Flora was the first example of how the Treaty Parties tried to protect the Antarctic ecosystem, as it gave Antarctica a 'Special Conservation Area' status. Within this there were restrictions on the killing of wildlife and the collecting of specimens only when authorized by permits and for scientific reasons.[16] This meant that each country had to authorize permits for activities affecting the wildlife in Antarctica, but the perceptions on this matter varied from country to country. For example, when the French started work on their airfield at Dumont d'Urville in 1983, they destroyed the nesting area of many penguins and birds. Was this not 'harmful interference' that goes against the articles in the Agreed Measures?[17] Because this activity was conducted prior to the adoption of the Madrid Protocol, no environmental evaluation was required therefore there was only the more general regulations within the Agreed Measures to guide behaviour.

With new technological developments, commercial fishing appeared as a new activity in the Southern Oceans. The Consultative Parties saw this unregulated fishing, especially on krill, as a new threat to the ecosystem and started work on designing a management regime for the conservation of Antarctic marine species. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) was competed in 1980 after three years in the making. But not all countries were happy about this agreement.[18] CCAMLR was built around the industry already there, and it includes rational use in its conservation approach.[19] CCAMLR is made to sustain the industry, but also to restrict the industry, by setting quotas and regulations for the fishing.[20] The main problem today is that there are huge holes in our knowledge about the ecosystem. Though work has been done to see the ecosystem as a whole.[21] In Conservation Measure 21-02-2011 it states 'Recognising that in the past, some Antarctic fisheries had been initiated and subsequently expanded in the Convention Area before sufficient information was available upon which to base management advice' and 'Agreeing that exploratory fishing should not be allowed to expand faster than the acquisition of

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[15] The Secretariat of the Antarctic Treaty. *The Agreed Measures for the Conservation of Antarctic Fauna and Flora*, http://ats.aq/e/ats_environ.htm.
[16] The Secretariat of the Antarctic Treaty. *The Agreed Measures for the Conservation of Antarctic Fauna and Flora*, http://ats.aq/e/ats_environ.htm.
[17] Keith Suter, *Antarctica : private property or public heritage?*, 100-101.
[18] Keith Suter, *Antarctica : private property or public heritage?*, 37-44.
[19] The Secretariat of the Antarctic Treaty. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), http://ats.aq/e/ats_keydocs.htm.
[20] The Secretariat of the Antarctic Treaty. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), http://ats.aq/e/ats_keydocs.htm.
[21] Keith Suter, *Antarctica : private property or public heritage?*, 41-44.

information necessary to ensure that the fishery can and will be conducted in accordance with the principles set forth in Article II' [22], to conserve with rational use.[23]

In many ways the industry itself has taken a huge part in improving the fishery, by establishing its own organisation[24] and fighting illegal, unreported and unregulated fishing (IUU). But how good are they at setting restrictions on their own livelihood?

Next on the Treaty agenda was to make a regime for mineral resources. Work on the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) started in 1982. It had been addressed back in 1972, when countries were urged to refrain from the exploration and exploitation of mineral resources until a minerals treaty was in place. The problems of possible impacts from minerals activity in Antarctica were then, and still are today, many. Environmental impacts could be enormous and permanent, but the economical impacts and territorial claims were also problematic. The negotiations culminated in 1988. Unlike CCAMLR, CRAMRA was proposed before there was any mineral resource activity, this meaning it put in place rules and legal requirements before the exploitation had even started, protecting and preserving the Antarctic environment.[25] In 1988 the New Zealand Foreign Minister, Russell Marshall called CRAMRA a farsighted and in some ways innovative Treaty in international environmental law, as it protected the environment.[26] But like CCAMLR it was proposed to regulate the industry, not prevent it. And due to hard work from environment NGOs, lobbying and persuading the Australian government, and then the French not to sign the Convention,[27] the treaty collapsed in 1989.[28]

In 1975 New Zealand had suggested that Antarctica be called a 'World Park', but as this was unattainable they changed their politics in 1990 and suggested a compromise agreement with a more environmental approach, making way for the adoption of the Protocol on Environmental Protection to the Antarctic Treaty in 1991.[29]

The Protocol on Environmental Protection was a response to changing environmental knowledge[30] and renewing existing measures and ad hoc additions.[31] The Environmental protocol and its six annexes were additions the Treaty to strengthen the Antarctic Treaty, because of a 'need to enhance protection of the Antarctic Environment'.[32] The Protocol designates Antarctica as a 'natural reserve, devoted to peace and science',[33] and introduces a strict and rigorous Environmental Impact Assessment (EIA) regime of all human activity

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[22] The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). *Conservation Measure 21-02-2011*, http://www.ccamlr.org/pu/E/e_pubs/cm/08-09/toc.htm.
[23] The Secretariat of the Antarctic Treaty. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), http://ats.aq/e/ats_keydocs.htm.
[24] Coalition of Legal Toothfish Operators (COLTO), available at http://www.colto.org/about-us/mission/.
[25] The Secretariat of the Antarctic Treaty. *The Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)*, http://ats.aq/e/ats_other.htm.
[26] Keith Suter, *Antarctica : private property or public heritage?*, 57-58.
[27] Signatures from all Consultative Parties were essential for CRAMRA to enter into force.
[28] Keith Suter, *Antarctica : private property or public heritage?*, 47-64.
[29] Keith Suter, *Antarctica : private property or public heritage?*, 65-66.
[30] Lorraine M. Elliott, *International environmental politics : protecting the Antarctic* (Basingstoke, Hampshire, New York, N.Y: Macmillan ; St. Martin's Press, 1994), 196.
[31] Lorraine M. Elliott, *International environmental politics : protecting the Antarctic* , 190.
[32] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection,* Preamble, http://ats.aq/e/ep.htm.
[33] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection,* Article 2, http://ats.aq/e/ep.htm.

undertaken. It makes individual States parties liable for their activities.[34] The six annexes build on the articles in the Treaty in more detail. The first, *Annex I: Environmental Impact Assessment*, gives detailed instructions on assessing Antarctic activities and evaluating the impacts on the environment. It also initiates monitoring of 'key environmental indicators'.[35] In *Annex II: Conservation of Antarctic Fauna and Flora* (updating and replacing the 1964 Agreed Measures) there are several additions to protect Antarctic species and prohibitions on removing or introducing species without permits.[36] To reduce human impact even further *Annex III: Waste Disposal and Waste Management* contains strict regulations about waste disposal. There is also a requirement to have management plans and these are to be revised as necessary. It also requires the removal of waste from old activities, if the cleaning up does not cause more mess. It is still possible, however, to dispose of human waste into the sea.[37] *Annex IV: Prevention of Marine Pollution* covers the Southern Oceans from 60 degrees South, and sets rules for vessels travelling in the Southern Oceans. It reinforces MARPOL 73/78[38] and the International Maritime Organization (IMO) guidelines.[39] The *Annex V: Area Protection and Management* is a reinforcement of the area management provisions within the Agreed Measures from 1964, and outlines the designation of Antarctic Specially Managed Areas (ASMAs) and Antarctic Specially Protected Areas (ASPAs).[40] By adopting the last annex in 2005, *Annex VI: Liability Arising from Environmental Emergencies*, all operators in Antarctica now have obligations to pay for the clean up of environmental damage, where this is possible. It has measures to prevent, minimize and contain environmental impacts, but it only covers emergencies. It is still a big step towards environmental protection of the Antarctic Treaty area[41] but it has not yet entered into force.[42]

The additions to the Treaty provide evidence of the desire of the ATCPs to change and adjust human behaviour in the Antarctic according to need (real or perceived) and to put in place mandatory regulations to encourage compliance. But the Antarctic Treaty System is not perfect; the main weakness is that, particularly in terms of EIA, it relies upon the individual governments to uphold their obligations. And this can easily be exploited in such a vast, isolated area.

Changes to the Antarctic Treaty System are made continuously to take into consideration new knowledge and understanding and improve environmental behaviour.

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[34] Francesco Francioni, *International environmental law for Antarctica* (Collana di studi / Istituto di diritto pubblico e internazionale, Facoltà di giurisprudenza, Università degli studi di Siena; Milano: Giuffrè, 1992),17-30.

[35] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection,* Annex I, http://ats.aq/e/ep_eia.htm.

[36] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex II, http://ats.aq/e/ep_faflo.htm.

[37] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex III, http://ats.aq/e/ep_waste.htm.

[38] International Maritime Organisation. *International Convention for the Prevention of Pollution from Ships (MARPOL)*, http://www.imo.org/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-%28marpol%29.aspx.

[39] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex IV, http://ats.aq/e/ep_marine.htm.

[40] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex V, http://ats.aq/e/ep_protected.htm.

[41] Triggs, Gillian D. *International law and Australian sovereignty in Antarctica* (Sydney: Legal Books, 1986), 129-131.

[42] The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex VI, http://ats.aq/e/ep_liability.htm.

Meanwhile in the rest of the world…

Pollution caused by fossil fuel burning and the introduction of cars as common property started to worry scientists in the 1930s and dire predictions were made. The changes because of human activity were already happening, but to what extent were not certain. Awareness was increasing about the environment and pollution.[43]

After the cold years in Europe in the 1960s scientists predicted a cooling period in time, but when the 70s came and one could see the rise in temperature, it was far from that cooling period the scientists had predicted. And as more research on climate was conducted around the world it became evident that we would not get a colder climate but a warmer one, with more extreme weather. People, however, were not convinced that there was a change in the climate.[44] The 1970s and 80s with its acid rain washed away many sceptics. Focus had moved towards environmental protection and stewardship.

The United Nations Conference on the Human Environment was held in Stockholm in 1972. Norway was the first country to establish a Ministry of the Environment, and sent its minister to the conference.[45] At the conference the nations organised an action plan for the human environment and established the United Nations Environment Programme (UNEP).[46] Environmental protection was on the world agenda.[47]

The perception of the word environment has changed, and we've added to our environmental concept. Human activity and our impact has become an important part of environment, and the changes we cause. Work towards making the world a better place, environmentally, began with reducing emissions of certain substances, decreasing sea and air pollution.[48] The reductions of substances like DDT, sulphur, nitrogen, PCB, CFCs and POPs were negotiated in conventions, and environment and stewardship were key in politics.[49]

In the 1980s there was an increase in talk about the public heritage and its protection. And it was at this time that Antarctica was put on the agenda as one of the global commons needing protection.[50] As the Report of the World Commission on Environment and Development: Our Common Future was presented in 1987[51] focus was put on sustainable development and stressing the point that 'the environment is the business of everybody...'.[52] The second green wave was on its way and scientists looked towards the Polar Regions to seek more answers as questions about the ozone hole and greenhouse effect arose.[53]

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[43] Keith Suter, *Antarctica : private property or public heritage?*, 121, 5.
[44] Nigel Calder, *The weather machine* (N.Y.: Viking Press, 1976), 7-14.
[45] Miljøverndepartementet. *Viktige begivenheter fra 1910 til 2002 i miljøforvaltningen*, http://www.regjeringen.no/nb/dep/md/dep/org/historikk/viktige-begivenheter-fra-1910-til-i-dag-.html?id=87191.
[46] United Nations Environment Programme. *Report of the United Nations Conference on the Human Environment*, Stockholm 1972,http://www.unep.org/Documents.Multilingual/default.asp?documentid=97&l=en.
[47] Miljøverndepartementet. *Viktige begivenheter fra 1910 til 2002 i miljøforvaltningen*, http://www.regjeringen.no/nb/dep/md/dep/org/historikk/viktige-begivenheter-fra-1910-til-i-dag-.html?id=87191.
[48] Miljøverndepartementet. *Viktige begivenheter fra 1910 til 2002 i miljøforvaltningen*, http://www.regjeringen.no/nb/dep/md/dep/org/historikk/viktige-begivenheter-fra-1910-til-i-dag-.html?id=87191.
[49] United Nations Economic *Commission for Europe. Convention on Long-range Transboundary Air Pollution*, http://www.unece.org/env/lrtap.
[50] Keith Suter, *Antarctica : private property or public heritage?*, 115-121.
[51] United Nations. *Report of the World Commission on Environment and Development: Our Common Future*, http://www.un-documents.net/wced-ocf.htm.
[52] United Nations. *Report of the World Commission on Environment and Development: Our Common Future, Part III – 10*, http://www.un-documents.net/wced-ocf.htm.
[53] Keith Suter, *Antarctica : private property or public heritage?*, 5.

NGOs having a say

There are many thoughts on how Antarctica should be managed and non-governmental organisations (NGOs) have come up with several suggestions and ideas.

In 1978 the Antarctic and Southern Ocean Coalition (ASOC) was founded, comprising around 200 environmental NGOs working together on raising awareness of environmental issues. They also lobbied against the CRAMRA and their actions helped in Australia and France's change of mind on signing the Treaty. ASOC was given observer status in the Antarctic Treaty System. They attend annual meetings and continue to speak the environmental voice of Antarctica. [54]

Of the environmental NGOs, Greenpeace is one of the organisations that have had a big influence on Antarctic management. They sent expeditions down from 1985 and built their own base, the World Park Base in 1987, removed in 1992. Greenpeace have made subsequent inspections and observations at different bases, looking at their impact on the environment, fuel operations and waste management disposal and treatment.[55] They have also given suggestions for improvement to the different National Programmes, but most importantly they have raised awareness and questioned the implementation and handling of operations—like the procedure around building the Dumont d'Urville airfield—–by raising public awareness. Greenpeace also protested loudly against whaling, and worked towards greater protection of the Southern Oceans. As Greenpeace describes themselves: They went from being unwanted outsiders to becoming a key player in having a say about the future of Antarctica. Greenpeace members lobbied their governments to take responsibility for protecting the continent.[56]

Other factors that helped the politicians and eventually the Treaty Parties change their minds about CRAMRA were the accidents and oil spills of the *Bahaia Paraiso* in the Antarctic Peninsula and the disastrous *Exxon Valdez* in the Northern Hemisphere. In a similar vein, accidents with tourist vessels in the Antarctic Peninsula—the sinking the MV *Explorer*[57] and the grounding of the MS *Nordkapp*—helped the treaty parties change their minds about collaborating with the IMO on the adoption of a mandatory code for polar shipping, which they had been resisting for some time.[58] Actions of NGOs such as ASOC helped keep the issues of unsuitable tourist vessels in the Antarctic Treaty area alive and in the public spotlight.

In fact tourism has been an increasing activity in Antarctica since the mid 1960s. In 1991, at the time the Environmental Protocol was adopted, tour operators joined together and formed the International Association of Antarctica Tour Operators (IAATO) to stand united and work together towards safe and environmentally responsible tourism in the Antarctic. By educating and making donations to causes in Antarctica they raise public awareness and concern about the conservation of Antarctica.[59]

But tourism is not the only industry to form an organisation. The fishing industry has also united and formed the Coalition of Legal Toothfish Operators (COLTO) in the fight against

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[54] Antarctic and Southern Ocean Coalition. *History*, http://asoc.org/about/history.
[55] Greenpeace Antarctic Expedition and Greenpeace International, "Greenpeace ... Antarctic Expedition report" (Amsterdam: Greenpeace International, 1987 – 1993)
[56] Greenpeace. *Antarctic Victories*, http://www.greenpeace.org/usa/en/campaigns/victories/antarctica/.
[57] Ex Lindblad Explorer.
[58] Berkman, Paul Arthur. *Science into policy : global lessons from Antarctica*, 153.
[59] The International Association of Antarctica Tour Operators (IAATO). *History of IAATO*, http://iaato.org/history-of-iaato;jsessionid=F596FF69AE50084CEB03B70D3AC5AC85.

illegal, unreported and unregulated (IUU) fishing and working towards a sustainable industry 'from the sea to the table'.[60]

NGOs are in general concerned about the common things that unite people and by working together they created a force strong enough to influence the politicians and the Antarctic Treaty System. NGOs can also be used to influence people and the global opinion, and to conciliate between states.[61]

Public opinions and actions have influenced politics, and when standing together the NGOs have shown how big a force they can create.

Taking responsibility, cleaning up

Man's impact on the Antarctic has always been known, but not to what extent. As recorded in the Australian National Antarctic Research Expeditions (ANARE) manual from 1959 'the intrusion of Man will inevitably upset [this] balance, the intricacies of which are as yet unknown'.[62] Knowing that, and then looking at the activities undertaken in Antarctica, a lot of what was done by different nations was not even permitted within their own country. So why did they do it in Antarctica?

Making the public aware of the behaviour of people visiting and working in Antarctica has prompted many changes, for example when Greenpeace told the stories of garbage dumps filled with batteries and beer cans lying on the shore at McMurdo Station.[63]

The 1959 Antarctic Treaty was not originally meant for environmental protection, except for the prohibition of the dumping of radioactive waste and the weapons testing ban, but the environment became one of the main focuses in politics and decision-making during the following decades. During this time the Antarctic Treaty System's rights to stewardship of the Antarctic environment were extended.[64]

As humans expanded their activities on the continent there was a need to evolve measures to restrict human behaviour. An awakening on how the environment was changing 'at home', made people more aware about how they treated the Earth. But it did not matter to recycle all your bottles at home when you were dumping tons of waste into the sea in Antarctica and leaving all the rubbish behind when you left. Environmental NGOs shouted loud, but it took a long time before the politicians heard them.

It was reported that the scientists had to show great care in the field where they did their research, but for every scientist there were two technicians and they were not as responsible in their actions but 'very great care will have to be observed by all visitors'[65] and so the changes began. By training staff in changing their behaviour they could reduce the human impact on the environment.

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[60] Coalition of Legal Toothfish Operators (COLTO), *Mission*, http://www.colto.org/about-us/mission/.
[61] Suter, Keith. *Antarctica : private property or public heritage?* (Leichhardt, N.S.W London: Pluto Press Australia ; Zed Books, 1991) 131-133.
[62] Australian National Antarctic Research Expeditions. *ANARE leaders' manual* (Melbourne: Antarctic Division, 1959), 44.
[63] Greenpeace Antarctic Expedition and Greenpeace International, "Greenpeace ... Antarctic Expedition report" (Amsterdam: Greenpeace International, 1987-1988), 8-15.
[64] Elliott, Lorraine M. *International environmental politics : protecting the Antarctic* (Basingstoke, Hampshire, New York, N.Y: Macmillan ; St. Martin's Press, 1994), 206-207.
[65] Australian National Antarctic Research Expeditions. *ANARE leaders' manual* (Melbourne: Antarctic Division, 1959), 44.

Influenced by the environmental NGOs, who had done a great job lobbying their governments to get their opinions through, laws were made and changes in opinion where happening. With the adoption of the Protocol on Environmental Protection, several big changes were made to how operations were done, as it restricts human behaviour and implements working towards making less human impacts on the environment. Assessment of the environmental impacts of activities and operations undertaken in Antarctica, the EIA, improves planning and prevents potential excess impacts. By investigating, monitoring and evaluating activities reductions on human impact on the environment can be made, such as better logistics and cooperation,[66] which have reduced unnecessary transportation impacts.

Changes to operations and activities have made them more environmental friendly, but technology has also made improvements to reducing the human impact, though technology comes at a cost, making improvements slow. Science is the main reason for being in Antarctica, so why aren't nations spending bigger budgets on Antarctic science?[67] The science is presented as being done for the 'greater good', to get more information and knowledge about the Earth, so having to spend money to reduce human impact on such a vast continent has not been accepted easily, particularly as some budgets, such as that of Antarctica New Zealand, are being capped annually. Antarctica is fronted as the 'key' to the solutions and answers around the global warming, but have we forgotten about the other environmental issues in the big focus on climate?

There is still a lot of 'old stuff' lying around, at old bases, refuges, whaling stations. Who is responsible for cleaning up on a continent that no one owns? Who is responsible? Information and enlightenment has been crucial in changing behaviour and the process of cleaning up and improving practices is gradually happening, in response to the changes and additions to the Antarctic Treaty.

But when are our actions good enough? As our knowledge of our planet increases, and we see the impact we have and have had, the answer becomes clear: Never. However, many countries are working towards setting good examples of environmentally sensitive behaviour in Antarctica and serve as benchmarks for other countries to follow.

The Committee for Environmental Protection (CEP) have made a 5-year work plan for further work involving both small scale measures for the continent and bigger measures which include climate change. One of the high priority cases includes repair or remediation of environmental damage, dealing with the legacy of past activities.[68] Newly accruing problems are also being dealt with, such as unintended introductions of species.[69]

The 5-year work plan shows how the environmental focus has changed drastically from firstly ignoring the environment except for a cursory acknowledgement, then choosing the environment over mining, then understanding new environmental obligations – cleaning up, assessing what the vulnerabilities are and moving forward to more pragmatic approaches to the environmental job at hand.

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[66] Like the US, Italy and New Zealand cooperation on logistics and transportation, and the DRONSHIP and DRONAIR, air and sea cooperations in Dronning Maud Land, where 11 countries are working togwther.
[67] New Zealand and Norway both have an annual budget for operating costs in Antarctica of 12 million NZD. Norway has a budget of about 5 times as much for science in the Arctic.
[68] The Secretariat of the Antarctic Treaty. *CEP 5-year Work Plan*, http://www.ats.aq/e/cep.htm.
[69] The Secretariat of the Antarctic Treaty. *New Publication: Non-Native Species Manual*, 17.10.2011, http://www.ats.aq/devPH/noticia_completa.aspx?IdNews=63&lang=e.

Summary

Antarctica has been on the world agenda for over 100 years, for various reasons. In the beginning it was to be explored, which it still is, but now with different premises. The difference in approach is great, as environmental focus has coloured the continent green and left its mark.

Looking at the changes in human behaviour and focus from today's perspective, it is clear that an environmental conscience is a new phenomenon, and action taken is only very recent. The early exploration of the continent with its distinct traces, many still visible today, opened up the continent for further development. And any human presence and activity corrupts the environment.[70]

Men have always wondered and sought answers, and science is regarded as the main reason for involvement and activity undertaken in the Antarctic. As focus on how humans impacted the environment elsewhere on the planet grew, the view was shifted towards the Polar Regions to seek more answers. But in the pursuit of revelations on the environment, the human behaviour undertaken in Antarctica and its impact revealed attitudes far from the environmentalism showed 'at home'. Measures were put in place to restrict previous uncontrolled actions, and were evaluated and revised as the 'need' for new laws and regulations arose. The adoption of the Protocol on Environmental protection was particularly made to address the new environmental perspective and applied for *all* activities undertaken in Antarctica. With more knowledge and information there were changes made in attitudes, behaviour and actions.

In pursuit of science, new areas of resources were revealed. The marine resources were especially exploited, and are still affected today, and regulations were put in place to restrict and manage the industries, with some resources now conserved for rational use to keep them sustainable.

During the last 50 years comprehensive instruments been made and added to the Antarctic Treaty to manage and restrict human behaviour and activity in the Antarctic. We have moved from a focus on use value to a focus on a high quality environment. The extent of human impact on the global environment has emerged as an issue for the common future of mankind and the protection of the Antarctic is part of the stewardship role we have taken on.[71] To do research successfully we will need to continue to 'balance the potentials of scientific gain and environmental impact'.[72] The current legal regime, particularly the Environmental Protocol, will help us achieve this globally important goal.

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[70] National Research Council (U.S.). Committee on Antarctic Policy and Science, *Science and stewardship in the Antarctic* (Washington, D.C.: National Academy Press, 1993), 45.
[71] Berkman, Paul Arthur. *Science into policy : global lessons from Antarctica*, 222.
[72] National Research Council (U.S.). Committee on Antarctic Policy and Science, *Science and stewardship in the Antarctic*, 31.

Bibliography

Arctowski, Henryk. *The problem of Antarctic exploration*, Dover, 1899.

Australian National Antarctic Research Expeditions. *ANARE leaders' manual*, Melbourne: Antarctic Division, 1959.

Berkman, Paul Arthur. *Science into policy : global lessons from Antarctica*, San Diego, CA, 2002.

Calder, Nigel. *The weather machine*, N.Y.: Viking Press, 1976.

Elliott, Lorraine M. *International environmental politics : protecting the Antarctic*, Basingstoke, Hampshire, New York, N.Y: Macmillan ; St. Martin's Press, 1994.

Francioni, Francesco. *International environmental law for Antarctica*, Collana di studi / Istituto di diritto pubblico e internazionale, Facoltà di giurisprudenza, Università degli studi di Siena; Milano: Giuffrè, 1992.

Greenpeace Antarctic Expedition and Greenpeace International, "Greenpeace ... Antarctic Expedition report", Amsterdam: Greenpeace International, 1987 – 1993.

Mulder, Thomas J. *Antarctica : global, environmental and economic issues*, Arctic region and Antarctica issues and research; New York: Nova Science Publishers, 2011.

National Research Council (U.S.). Committee on Antarctic Policy and Science, *Science and stewardship in the Antarctic,* Washington, D.C.: National Academy Press, 1993.

Suter, Keith. *Antarctica : private property or public heritage?* Leichhardt, N.S.W London: Pluto Press Australia ; Zed Books, 1991.

Triggs, Gillian D. *International law and Australian sovereignty in Antarctica*, Sydney: Legal Books, 1986.

Quigg, Philip W. *Antarctica : the continuing experiment,* Headline series,; New York, N.Y.: Foreign Policy Association, 1985.

Zachariassen, Ketil, et al. *Norsk polarhistorie,* Oslo, Gyldendal, 2004, 3 vol.

Antarctic and Southern Ocean Coalition. *History*, http://asoc.org/about/history (visited 16.02.2012).

Coalition of Legal Toothfish Operators (COLTO), *Mission*, http://www.colto.org/about-us/mission/ (visited 16.02.2012).

Greenpeace. *Antarctic Victories*, http://www.greenpeace.org/usa/en/campaigns/victories/antarctica/ (visited 16.02.2012).

International Maritime Organisation. *International Convention for the Prevention of Pollution from Ships (MARPOL)*, http://www.imo.org/about/conventions/listofconventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-%28marpol%29.aspx (visited 16.02.2012).

International Whaling Commission. *International convention for the regulation of whaling*, 02.12.1947, http://iwcoffice.org/commission/convention.htm (visited 16.02.2012).

Miljøverndepartementet. *Viktige begivenheter fra 1910 til 2002 i miljøforvaltningen*, http://www.regjeringen.no/nb/dep/md/dep/org/historikk/viktige-begivenheter-fra-1910-til-i-dag-.html?id=87191 (visited 16.02.2012).

The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). *Conservation Measure 21-02-2011*, http://www.ccamlr.org/pu/E/e_pubs/cm/08-09/toc.htm (visited 16.02.2012).

The International Association of Antarctica Tour Operators (IAATO). *History of IAATO*, http://iaato.org/history-of-iaato;jsessionid=F596FF69AE50084CEB03B70D3AC5AC85 (visited 16.02.2012).

The International Polar Year. *About IPY*, 04.02.2010, http://www.ipy.org/about-ipy (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Agreed Measures for the Conservation of Antarctic Fauna and Flora*, http://ats.aq/e/ats_environ.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *Convention for the Conservation of Antarctic Seals (CCAS)*, http://ats.aq/e/ats_keydocs.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)*, http://ats.aq/e/ats_keydocs.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)*, http://ats.aq/e/ats_other.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection,* Preamble*,* http://ats.aq/e/ep.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection,* Article 2, http://ats.aq/e/ep.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection,* Annex I, http://ats.aq/e/ep_eia.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex II, http://ats.aq/e/ep_faflo.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex III, http://ats.aq/e/ep_waste.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex IV, http://ats.aq/e/ep_marine.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex V, http://ats.aq/e/ep_protected.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *The Protocol on Environmental Protection*, Annex VI, http://ats.aq/e/ep_liability.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *CEP 5-year Work Plan*, http://www.ats.aq/e/cep.htm (visited 16.02.2012).

The Secretariat of the Antarctic Treaty. *New Publication: Non-Native Species Manual*, 17.10.2011, http://www.ats.aq/devPH/noticia_completa.aspx?IdNews=63&lang=e (visited 16.02.2012).

United Nations. *Report of the World Commission on Environment and Development: Our Common Future, Part III – 10*, http://www.un-documents.net/wced-ocf.htm (visited 16.02.2012).

United Nations Environment Programme. *Report of the United Nations Conference on the Human Environment*, Stockholm 1972, http://www.unep.org/Documents.Multilingual/default.asp?documentid=97&l=en (visited 16.02.2012).

United Nations Economic *Commission for Europe. Convention on Long-range Transboundary Air Pollution*, http://www.unece.org/env/lrtap (visited 16.02.2012).